

REMARKS

Claims 26-30, 32-41 and 43-50 were examined and rejected. Claim 30 has now been canceled, without prejudice, and its features have been added to presently amended independent claims 26 and 39. Therefore, claims 26-29, 32-41 and 43-50 are now pending in the application. No new matter has been added. The claim amendments are supported, for example, in the specification, at page 3, lines 21-27, and page 4, lines 5-8.

The Action states that Applicant's remarks made in the May 19, 2008, response to the earlier Action were not commensurate in scope with the claims. Applicant disagrees. However, in any event, it is urged that presently amended independent claims 26 and 39 now more clearly recite the elements and process features discussed in Applicant's previous response, dated May 19, 2008. The claims now more clearly recite that the curable polymer material of the invention is permitted to cure on the single heat exchanger plate to which it has been applied before that plate is provided adjacent to another plate in a plate package of a plate heat exchanger. Claim 26 is directed to a heat exchanger plate, while claim 39 is directed to a method for manufacturing a heat exchanger plate. The claims call for the plate to have a curable polymer material on it which, when cured, forms a gasket attached to that plate (but not attached to another plate). See also, for example, the specification, at page 10, lines 5-15, for further explanation of this feature.

It is urged that the amendments made herein do not raise new issues and do not create the need for additional searching. The Amendment should be entered and the claims allowed.

Double Patenting

The pending claims were rejected on the grounds of nonstatutory double patenting over at least one claim of commonly owned US Patent No. 7,191,821 either alone or in view of the Sumitomo et al. reference (JP 356000992).

To overcome this rejection, the undersigned attorney has enclosed a Terminal Disclaimer. This rejection is therefore removed.

Claim Rejections – 35 USC § 103

Claims 26-28, 32-33, 38 and 43-46 were rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Sears (US Pat. 5,597,453) in view of Nakamura et al. (EP 0 744 444). Claims 29-30, 34-37, 39-41 and 47-50 were also rejected under 35 U.S.C. 103(a) over the same two references and further in view of Sumitomo et al. These rejections are respectfully traversed. Applicant here distinguishes the pending claims over the cited references.

Sears discloses a plate heat exchanger having a number of embodiments. Seals 144, 166 are shown. Seal 166 may be made of a liquid sealing material such as silicone (col. 9, lines 25-29). However, liquid silicone is applied in the interspace between two adjacent heat exchanger plates, after which the liquid silicone is allowed to cure. The sealing material thus joins the two plates to each other. However, Sears does not disclose a single heat exchanger plate manufactured with a gasket cured on the single plate itself before the plate is provided with adjacent heat exchanger plates for forming a plate heat exchanger.

Sears clearly does not disclose certain present claim features of claims 26 and 39, as follows:

1. The Sears curable polymer material is not disclosed as having a first component and a second component which are mixed to form an applicable polymer mixture.
2. In applicant's claims, the curable polymer material is present and cured on the border area of an individual plate, and arranged to form a gasket. Upon curing, the gasket includes an upper surface which in cross section has a softly curved, convex shape. In Sears, as disclosed at col. 9, lines 25-30, a bead of liquid sealing material is placed between adjacent plates and then cured to join the plates together. Clearly, the Sears material is cured simultaneously against two adjacent plates and does not form an exposed surface having a softly curved, convex shape in cross section to be placed in abutment with another plate.
3. In applicant's claims, the gasket is formed on a plate and is suitable for providing tight abutment against an adjacent plate in the plate heat exchanger. In Sears, the gasket is formed between plates and cannot then be placed in abutment with an adjacent plate after being formed.

Furthermore, the Sears reference teaches away from the present claimed invention. At col. 3, lines 24-31, Sears states:

“Then, as the next plate is laid atop the previous plate with this bead of [uncured] gasketing material, the gasketing material is forced into a waffle-like pattern surrounding the various contact points previously mentioned, and thereby adhere to each of the adjacent plates. As can be appreciated, after the gasketing material has been cured it interlocks with the contact points to provide a seal....” (emphasis added)

Thus, Sears discloses that, in his device, it is desired to cure the gasket material after it is placed into contact with adjacent plates so that it “adhere[s] to each of the adjacent plates.” See also, Sears patent, at col. 9, lines 25-29, for a similar disclosure. This is contrary to applicant’s claimed invention and, of course, teaches away from applicant’s invention.

Nakamura et al. relates to a composition of liquid silicone rubber for a lubricant seal. It does not refer or relate to plate heat exchangers and is therefore an inapposite reference. In any event, as is clear, the pending claims relate to a heat exchanger plate, a plate heat exchanger and a method for manufacturing a heat exchanger plate. Nakamura et al. does not compensate for the deficiencies noted above concerning the Sears reference.

According to the abstract of Sumitomo et al. provided with the Japanese language patent, the reference discloses a plate heat exchanger having a gasket groove with a gasket. It appears that this gasket is a conventional gasket in the sense that it is pre-manufactured and thereafter mounted in the gasket groove in a conventional manner. The gasket and the gasket groove are provided with a partly circular cross-section as can be seen in Fig. 3 with a planar bottom. The purpose of the circular cross-section seems to be to provide a tight abutment between the gasket and the gasket groove so that heat exchanger media cannot enter between the gasket and the groove. In the claims of the instant application, however, the gasket is manufactured from a curable polymer material that is applied to and cured on a border area of a heat exchanger plate such that the polymer material extends along the whole, or parts of, the border area and is arranged to form a gasket or tight abutment subsequently against an adjacent plate in the plate heat exchanger. Such a construction and method is not disclosed or suggested by Sumitomo et al., as best understood.

Each of the cited references is therefore distinguishable from the pending claims. Sears, the primary reference, teaches away from the pending claims. It is not seen that any of the cited references disclose or suggest to one of ordinary skill in the art at the time the invention claimed

herein was made, whether the references are taken alone or in combination, a single heat exchanger plate having a gasket of curable material cured thereto, or a plate heat exchanger made of such plates or a method for manufacturing such a plate, as claimed herein. Further, neither the Nakamura et al. reference nor the Sumitomo et al. reference provides or suggests what has been shown above is missing in the Sears reference.

For the reasons given above, claims 26 and 39 would not have been obvious over the cited references to one of ordinary skill in the art at the time the invention was made. Independent claims 26 and 39 are therefore allowable. The remaining claims depend directly or indirectly from one of these independent claims and are therefore allowable for at least the same reasons.

Conclusion

Entry of the present paper is proper, since the amendments made do not raise new issues. For at least the reasons indicated above, all pending claims are allowable and the issuance of a notice of allowance is proper and is urged.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

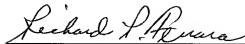
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Applicant : Tagesson
Serial No. : 10/523,236
Filed : January 26, 2005
Page : 10 of 10

Attorney's Docket No.: 09546-0022US1 / 55531 US
SB/MW

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Date: Nov. 18, 2008



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